

CLAIMS

What is claimed is:

1. A mixture of reaction products of



the mixture being substantially free from di-functional diols other than  $\text{HO}-\text{R}^2-\text{OH}$ ,

wherein

each  $\text{R}^1$  is independently a  $\text{C}_1\text{-}\text{C}_{10}$  alkyl group;

$\text{R}^2$  is a  $\text{C}_2\text{-}\text{C}_6$  alkylene group;

each of  $\text{R}^3$ ,  $\text{R}^4$ ,  $\text{R}^5$ , and  $\text{R}^6$  is independently a hydrogen atom or a  $\text{C}_1\text{-}\text{C}_4$  alkyl group

except that

at least one of  $\text{R}^3$  and  $\text{R}^4$  is a  $\text{C}_1\text{-}\text{C}_4$  alkyl group, and

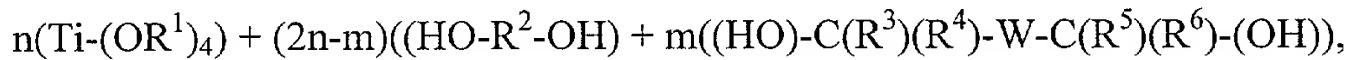
at least one of  $\text{R}^5$  and  $\text{R}^6$  is a  $\text{C}_1\text{-}\text{C}_4$  alkyl group;

$\text{W}$  is an oxygen atom, a sulfur atom, a nitrogen-containing group, a phosphorus-containing group, or a  $\text{C}_1\text{-}\text{C}_4$  alkylene group;

each of  $x$  and  $y$  is greater than 0; and

$y > z$ .

2. The mixture of claim 1 wherein  $y = 2x - z$  and each of  $x$ ,  $y$ ,  $z$  is a number greater than 0.
3. The mixture of claim 1 wherein  $z = 0$  and  $y/x > 2$ .
4. The mixture of claim 1 where  $\text{W}$  is a  $\text{C}_1\text{-}\text{C}_4$  alkylene group.
5. The mixture of claim 4 wherein  $\text{R}^1$  is an isopropyl group;  $\text{R}^2$  is a butylene group; each of  $\text{R}^3$ ,  $\text{R}^4$ , and  $\text{R}^5$  is a methyl group; and  $\text{R}^6$  is a hydrogen atom.
6. The mixture of claim 1 wherein the mixture of reaction products is substantially free from all mono- and di-functional alcohols.
7. A mixture of reaction products of



the mixture being substantially free from di-functional diols, wherein

each  $\text{R}^1$  is independently a  $\text{C}_1\text{-}\text{C}_{10}$  alkyl group;

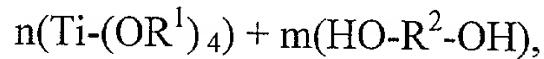
$R^2$  is a  $C_2$ - $C_6$  alkylene group;  
each of  $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  is independently a hydrogen atom or a  $C_1$ - $C_4$  alkyl group  
except that

at least one of  $R^3$  and  $R^4$  is a  $C_1$ - $C_4$  alkyl group, and  
at least one of  $R^5$  and  $R^6$  is a  $C_1$ - $C_4$  alkyl group;

$W$  is an oxygen atom, a sulfur atom, a nitrogen-containing group, a phosphorus-containing group, or a  $C_1$ - $C_4$  alkylene group; and

each of  $m$  and  $n$  is greater than 0.

8. The mixture of claim 7 where  $W$  is a  $C_1$ - $C_4$  alkylene group.
9. The mixture of claim 7 wherein  $R^1$  is an isopropyl group.
10. The mixture of claim 7 wherein  $R^2$  is a butylene group.
11. The mixture of claim 7 wherein  $R^1$  is an isopropyl group;  $R^2$  is a butylene group; each of  $R^3$ ,  $R^4$ , and  $R^5$  is a methyl group;  $R^6$  is a hydrogen atom; and  $W$  is a methylene group.
12. The mixture of claim 7 wherein  $m/2n$  is between about 0.1 to about 0.5.
13. The mixture of claim 12 wherein  $m/2n$  is between about 0.15 to about 0.25.
14. The mixture of claim 7 further comprising an organic solvent.
15. The mixture of claim 7 wherein the mixture is obtained from a reaction conducted in an organic solvent.
16. The mixture of claim 15 wherein the organic solvent is a chlorohydrocarbon.
17. The mixture of claim 16 wherein the organic solvent is *o*-dichlorobenzene.
18. The mixture of claim 7 wherein the mixture of reaction products is substantially free from all mono- and di-functional alcohols.
19. A mixture of reaction products of



wherein

each  $R^1$  is independently a  $C_1$ - $C_{10}$  alkyl group;

$R^2$  is a  $C_2$ - $C_6$  alkylene group; and

each of  $m$  and  $n$  is greater than 0, and  $m/n > 2$ .

20. The mixture of claim 19 wherein  $R^1$  is an isopropyl group.

21. The mixture of claim 19 wherein R<sup>2</sup> is a butylene group.
22. The mixture of claim 19 wherein R<sup>1</sup> is an isopropyl group and R<sup>2</sup> is a butylene group.
23. The mixture of claim 19 wherein 5 > m/n > 3.
24. The mixture of claim 19 wherein the mixture is obtained from a reaction conducted without a solvent.
25. The mixture of claim 19 substantially free of all mono- and di-functional alcohols.
26. A method for depolymerizing a polyester comprising the step of contacting, in the presence of heat, a mixture comprising: a polyester, an organic solvent which is substantially free of oxygen and water, and the mixture of claim 1, to produce macrocyclic oligoesters substantially free from macrocyclic co-oligoesters.
27. The method of claim 26 wherein the polyester comprise poly(1,4-butylene terephthalate).
28. A method for depolymerizing a polyester comprising the step of contacting, in the presence of heat, a mixture comprising: a polyester, an organic solvent which is substantially free of oxygen and water, and the mixture of claim 7, to produce macrocyclic oligoesters substantially free from macrocyclic co-oligoesters.
29. A method for depolymerizing a polyester comprising the step of contacting, in the presence of heat, a mixture comprising: a polyester, an organic solvent which is substantially free of oxygen and water, and the mixture of claim 19, to produce macrocyclic oligoesters substantially free from macrocyclic co-oligoesters.